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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/705,817  | 11/13/2003  | Liang Dong           | A8637               | 7847             |
| 23373   | 7590        | 08/15/2005           | EXAMINER            |                  |
| SUGHRUE MION, PLLC<br>2100 PENNSYLVANIA AVENUE, N.W.<br>SUITE 800<br>WASHINGTON, DC 20037 |             |                      | PAK, SUNG H         |                  |
|   |             |                      | ART UNIT            | PAPER NUMBER     |
|   |             |                      | 2874                |                  |

DATE MAILED: 08/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                               |                             |  |
|------------------------------|-------------------------------|-----------------------------|--|
| <b>Office Action Summary</b> | Application No.<br>10/705,817 | Applicant(s)<br>DONG ET AL. |  |
|                              | Examiner<br>Sung H. Pak       | Art Unit<br>2874            |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 23 May 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-10, 12-16 and 18-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-10, 12 and 13 is/are allowed.
- 6) ☒ Claim(s) 14-16 and 18-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Amendment***

Applicant's amendment filed 5/23/2005 has been entered. Claims 1-10, 12-16, 18-20 are now pending.

Amended claim 1 now contains allowable subject matter. Claim 16 has been amended to include limitations of now canceled claim 17, however claim 16 (and its dependent claims 18-20) are still unpatentable over the prior art of record and the previous ground of rejection is maintained in this office action.

Claims 14-15 have not been amended and they remain unpatentable over the prior art of record as discussed in the previous office action.

Please refer to Response to Arguments for details.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 14-15 are rejected under 35 U.S.C. 102(b) as being anticipated by DiGiovanni et al (US 5,864,644) as discussed in the previous office action.

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DiGiovanni discloses an optical device with all the limitations set forth in the claims, including: a cladding pumped fiber, wherein the core is doped with rare earth ions ('15' Fig. 1a- see also column 5, claim 2); a plurality of optical sources for optically pumping the cladding pumped fiber ('9'); a plurality of multimode fibers optically coupling the optical sources to the cladding pumped fiber, each multimode fiber having a first end coupled to one of the plurality of optical sources and a second end coupled to the cladding pumped fiber for coupling multimode light into a cladding of the cladding pumped fiber ('11'); a multimode fiber coupled to the cladding pumped fiber for coupling single mode light (Fig. 1a); wherein the plurality of multimode fibers and the multimode core fiber are bundled together into a fiber bundle, and the fiber bundle being tapered to a reduced cross sectional area prior to being coupled to the cladding pumped fiber (Fig. 1a, column 2 line 55- column 3 line 50).

Claims 16, 18-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Ruffin (US 4,606,020) as discussed in the previous office action.

Ruffin discloses an optical device with all the limitations set forth in the claims, including: a method for producing a fiber optic assembly comprising: providing a fiber bundle having an outer diameter, and splicing a first optical fiber to the fiber bundle, wherein the first optical fiber has an outer diameter which is at least equal to the outer diameter of the fiber bundle (column 3 lines 16-20); wherein the fiber bundle is first fused at one location and then cleaved at the fused location to form fiber bundle end for splicing (column 3 lines 21-23); wherein the splicing step is carried out by a fusion arc (column 3 line 20); providing a capillary (sheath) surrounding the fiber bundle and the first optical fiber, providing arc-entrance apertures in the

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capillary and fusing the capillary to the fiber bundle and the first optical fiber ('4' Fig. 1, column 3 lines 16-23).

***Allowable Subject Matter***

Claims 1-10, 12-13 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: A cladding pump optical fiber assembly is well known in the art. Snitzer et al (US 4,815,079) discloses a well known cladding pump optical fiber assembly, wherein a pump fiber is coupled to the cladding of the fiber amplifier (shown below).

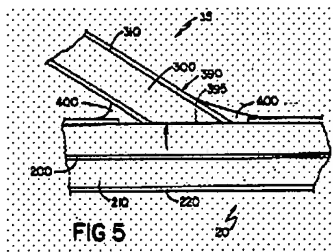


Figure 5 of Snitzer et al.

A more recent development utilizes bundled pump fibers fused and tapered at one end of the fiber amplifier. Gontheir et al (US 2005/0094952 A1) shows this arrangement as well as DiGiovanni et al (US 5,864,644) discussed above.

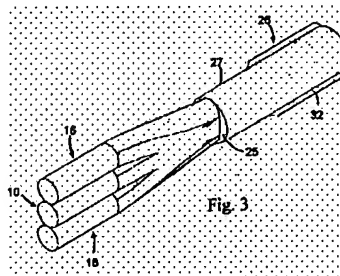


Figure 3 of Gontheir et al.

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However, none of the prior art fairly teaches or suggests such cladding pump optical fiber assembly, wherein the fiber that is coupled to bundled fibers (that is, the amplifier fiber) has a **tapered portion apart from the spliced portion** as claimed in the instant application. Prior art devices merely show tapering in the *bundled fibers* at the splice point, and does *not* teach any tapering for the main amplifier fiber. Also, there is no apparent reason why one of ordinary skill in the art would modify a prior art device to have a tapered portion on the cladding pumped fiber that is apart from the spliced portion, since none of the prior art recognizes any advantage from having such feature.

### ***Response to Arguments***

Claims 1-10, 12-13:

As discussed above, the amended claim 1 now contains allowable subject matter. Therefore, the previous ground of rejection on claims 1-10, 12-13 is withdrawn.

Claims 14-15:

On page 8 of the applicants' response, it is argued that DiGiovanni discloses the central fiber 31 and the spliced clad fiber 15 are collectively "single mode all the way", and that multimode light in DiGiovanni is coupled only into the cladding (page 8 lines 6-8 of applicants' response).

The examiner respectfully submits that the applicants' argument is only true for embodiments shown in Figs. 3A-3E of DiGiovanni. On the other hand, Figs. 1A-1D explicitly teaches all the limitations set forth in the claims including multimode fiber coupled to the core of

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the cladding pump fiber 15 as well as the multimode fibers coupled to the cladding of the fiber 15 (as discussed in the previous office action and maintained in this office action). Therefore, all the claimed limitations are clearly anticipated by DiGiovanni and the rejection is proper.

Claims 16, 18-20:

On page 8, it is argued that “[Ruffin] does not in fact disclose bundle fusing followed by cleaving of the fused location for splicing to the second fiber.” (page 8 lines 16-18).

The examiner respectfully submits that “cleaving” of the fused fiber is inherent in the fabrication of bundled fibers. After the plurality of fibers are fusion spliced together to form a bundled fiber, the end must be cleaved and polished before it is fusion spliced to the cladding pumped fiber. Otherwise, the end of the bundled fibers would have uneven lengths of fibers and will not form satisfactory splice between the bundled fibers and the cladding pumped fiber. Therefore, Ruffin fully anticipates the claimed limitations and the rejection is proper.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

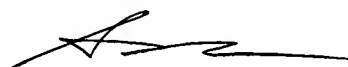
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CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sung H. Pak whose telephone number is (571) 272-2353. The examiner can normally be reached on Monday- Friday, 9AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (571)272-2344. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Sung H. Pak  
Patent Examiner  
Art Unit 2874

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